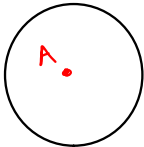


Ch 10 Circles

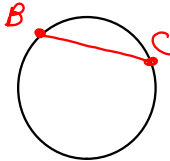
- 10-1 Use Properties of Tangents
- 10-2 Find Arc Measures



Circle--the set of all points in a plane equidistant from a given point

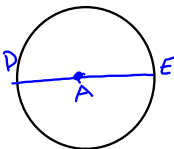
Center--given point

Circle A $\odot A$



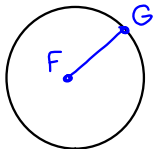
Chord--segment whose endpoints are on the circle

\overline{BC}



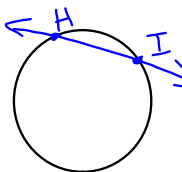
Diameter--chord that passes through the center

\overline{DE}



Radius--segment whose endpoints are the center and a point on the circle

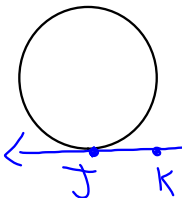
\overline{FG}



Secant--line that contains a chord; intersects the circle in two points

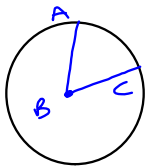
\overleftrightarrow{HI}
secant

\overline{HI}
chord



Tangent--line that intersects the circle in exactly one point

\overleftrightarrow{JK} J \rightarrow pt. of tangency

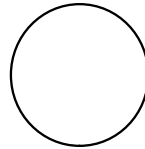


Central Angle--Angle whose vertex is the center and whose sides are radii.

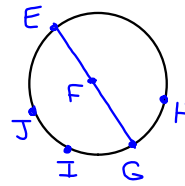
$\angle ABC$

Central angle intercepts an arc.

$\angle ABC$ intercepts \widehat{AC}



Arc--part of the circle



Minor Arc-- $< 180^\circ$

\widehat{HG}

2 letters

Major Arc-- $> 180^\circ$

\widehat{EIH}

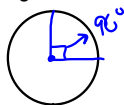
3 letters

Semicircle-- 180°

\widehat{EIG} \widehat{EJG}

3 letters

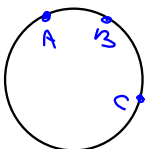
Measure of the central angle = measure of the intercepted minor arc



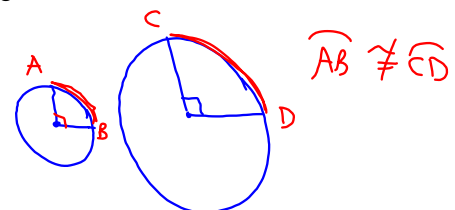
Congruent circles--circles with the same radius

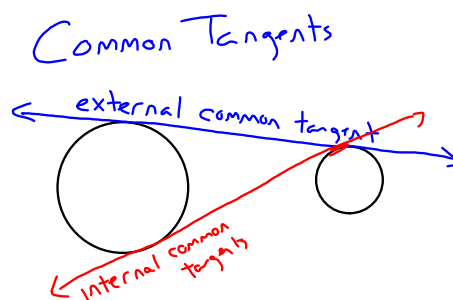
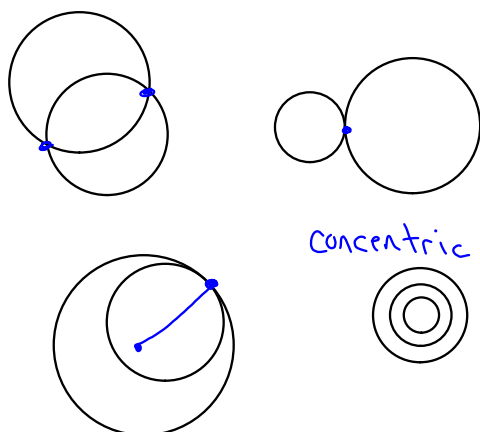
Congruent arcs--arcs with the same measure that are in the same circle or congruent circles

Postulate 23--Arc Addition Postulate--

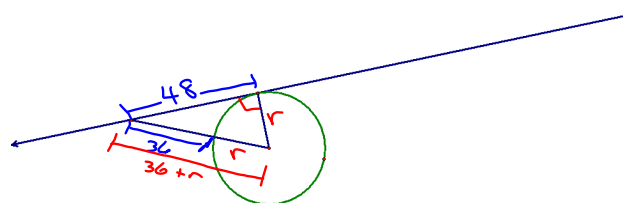
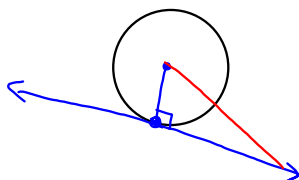


$$m\widehat{AB} + m\widehat{BC} = m\widehat{AC}$$



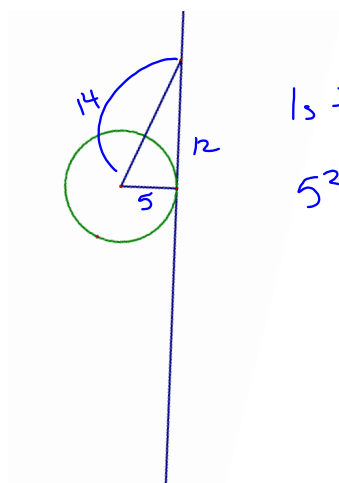


~~✓~~ Theorem 10.1--In a plane, a line is tangent to a circle iff the line is perpendicular to a radius of the circle at its endpoint on the circle



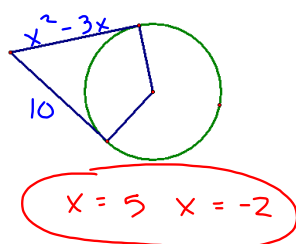
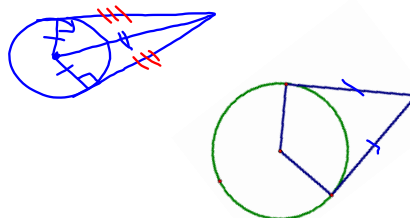
What is Radius?

$$\begin{aligned}
 r^2 + 48^2 &= (36 + r)^2 \\
 r^2 + 2304 &= 1296 + 72r + r^2 \\
 14 &= r
 \end{aligned}$$

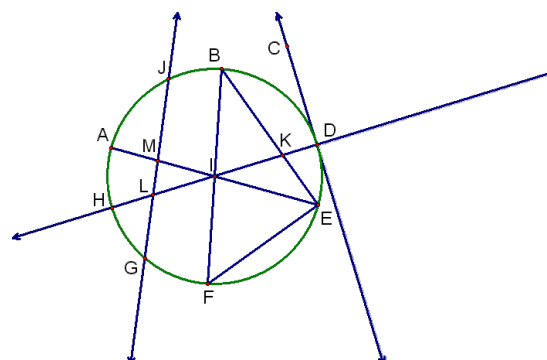


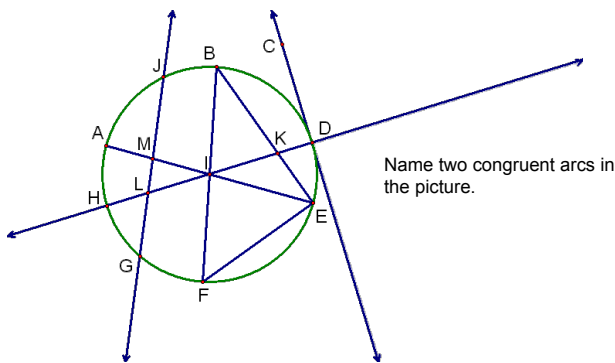
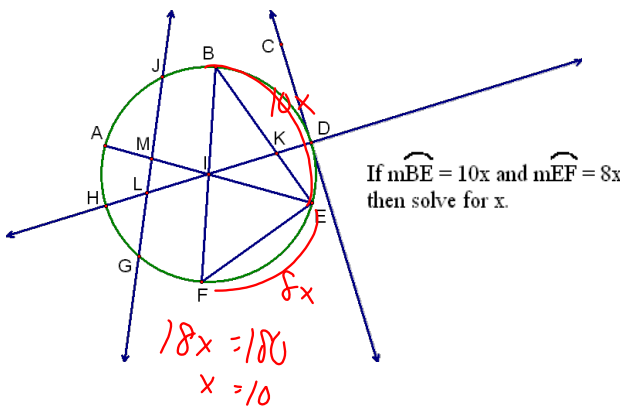
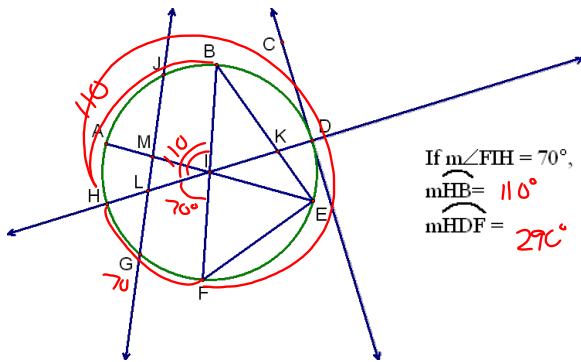
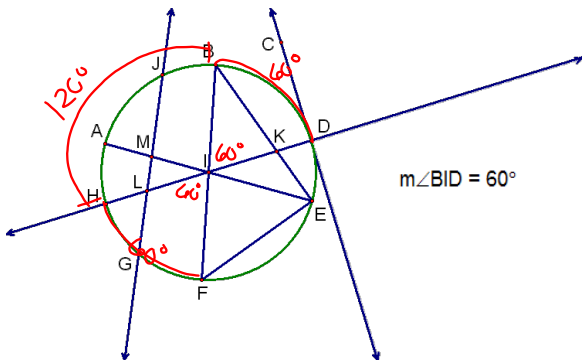
Is this tangent?
 $5^2 + 12^2 \stackrel{?}{=} 14^2$
 No \neq

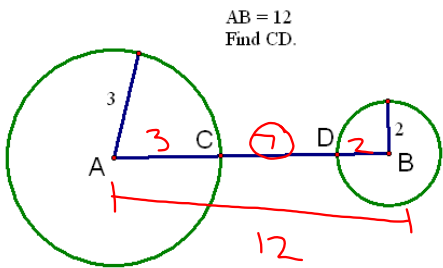
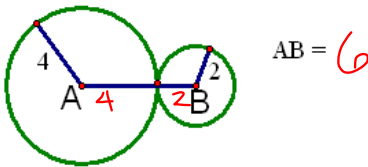
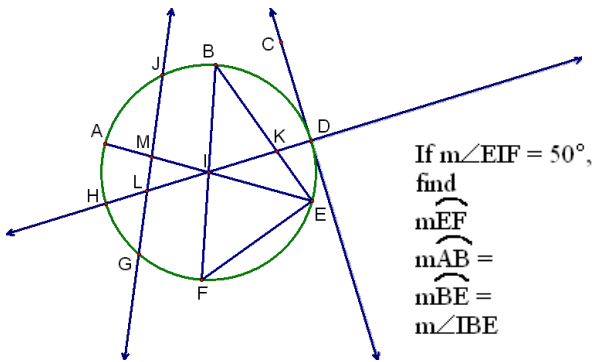
Theorem 10.2--Tangents from the same external point are congruent.



$$x = 5 \quad x = -2$$







HW
p655-657
#s 3-10, 15-22, 25
p661-662
#s 3-10, 21 (hint sohcahtoa)

Find each measure.

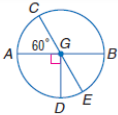
14. $m\angle CGB$

16. $m\angle AGD$

18. $m\angle CGD$
15. $m\angle BGE$

17. $m\angle DGE$

19. $m\angle AGE$

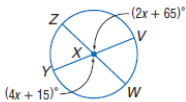


ALGEBRA Find each measure.

20. $m\angle ZXV$

22. $m\angle ZXY$
21. $m\angle YXW$

23. $m\angle VXW$



ALGEBRA In $\odot Z$, $\angle WZX \cong \angle XZY$, $m\angle VZU = 4x$, $m\angle UZY = 2x + 24$, and \overline{VY} and \overline{WU} are diameters. Find each measure.

32. $m\widehat{UY}$

34. $m\widehat{WX}$

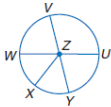
36. $m\widehat{WUY}$

38. $m\widehat{XVY}$
33. $m\widehat{WV}$

35. $m\widehat{XY}$

37. $m\widehat{YVW}$

39. $m\widehat{WUX}$



The diameter of $\odot C$ is 32 units long. Find the length of each arc for the given angle measure.

40. \widehat{DE} if $m\angle DCE = 100$

42. \widehat{HDF} if $m\angle HCF = 125$
41. \widehat{DHE} if $m\angle DCE = 90$

